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HYDRO-ELECTRIC INQUIRY COMMISSION

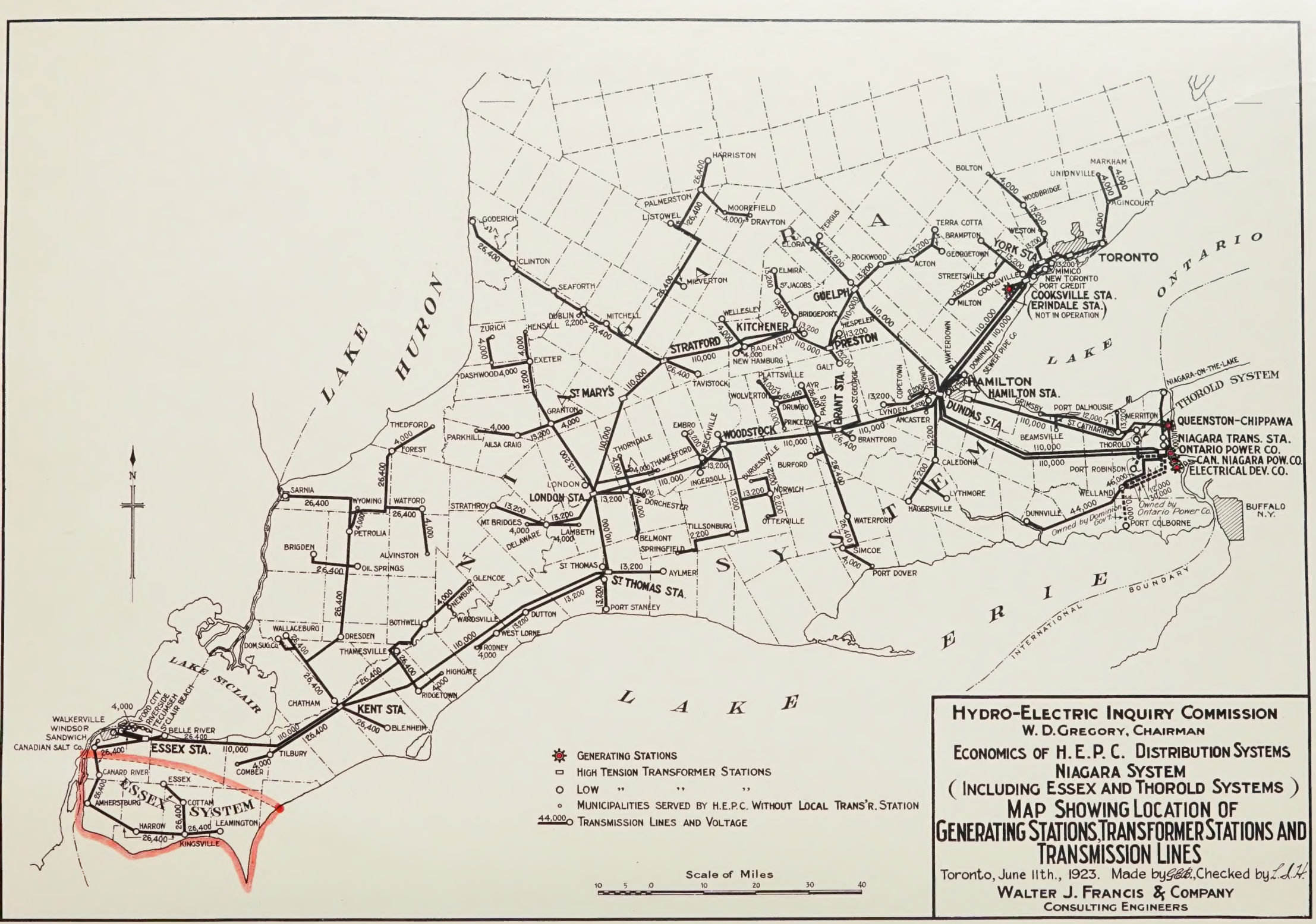
GENERAL REPORT

ESSEX SYSTEM

JOSEPH H. W. BOWER
SECRETARY

ESSEX SYSTEM

COPY



HYDRO-ELECTRIC INQUIRY COMMISSION

W. D. GREGORY, CHAIRMAN

ECONOMICS OF H. E. P. C. DISTRIBUTION SYSTEMS

NIAGARA SYSTEM

(INCLUDING ESSEX AND THOROLD SYSTEMS)

MAP SHOWING LOCATION OF GENERATING STATIONS, TRANSFORMER STATIONS AND TRANSMISSION LINES

Toronto, June 11th., 1923. Made by G.E.B., Checked by L.D.H.

WALTER J. FRANCIS & COMPANY

CONSULTING ENGINEERS

Map Showing Location of

Essex System

INDEX TO SECRETARY'S REPORT

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ESSEX SYSTEM

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[illegible] Bridge

INDEX (Continued)

Subject	Page
Summary	
Capital Investment	28
Reserve for Renewals	28
Reserve for Sinking Fund	29
Reserve for Contingencies	29
Results of Operation	29
Sources of Power Supply	30
Future Sources of Power Supply	30
General Relations	31

Toronto, Ontario.
August 29th, 1923.

Hydro-Electric Inquiry Commission,
W. D. Gregory, Esq., Chairman,
Toronto, Ontario.

re: General Report - Essex System

Mr. Chairman and Gentlemen:-

In accordance with your instructions, a general report on the Essex System has been made, along the lines approved of by the Commission on January 2nd. The work has been done under my direct personal supervision as per your instructions.

The reports of Messrs. Price, Waterhouse & Company and Messrs. Clarkson, Gordon & Dilworth, together with the report on this system by the Commission's Consulting Engineer, Mr. Walter J. Francis, have been used in the preparation of this report. No public hearing was held in connection with this system.

The report falls naturally into two parts. The first part includes sections entitled "Historical Sketch", "Physical", "General Economics" and "General Relations". These sections are largely a recital of facts. The second part of the report entitled "Summary" is merely intended to direct attention to those points which appear to require special consideration by the Commission.

All figures used in this report have been carefully checked by a representative of Messrs. Price, Waterhouse & Company. Reports forming the basis of this report are appended hereto, and in order to facilitate reference to the documents in question, on the right-hand margin of the report throughout will be found abbreviated references.

Yours very truly,

J. W. Dawson
Secretary

JWD/G

Toronto, Ontario,
April 20th, 1956.

Grade-Disparity Inquiry Commission,
R. M. Gregory, Esq., Chairman,
Toronto, Ontario.

The Central Ontario - Bruce Area

Mr. Chairman and Gentlemen:

In accordance with your instructions, a general report on the Bruce System has been made, along the lines approved of by the Commission on January 2nd. The work has been done under my direct personal supervision on your instructions.

The results of survey, plan, estimates & cost-benefit and Sinking Fund Charts & Tables, together with the report on this system by the Commission's Consulting Engineer, Mr. Walter L. Jenkins, have been used in the preparation of this report. No public hearing was held in connection with this system.

The report falls naturally into two parts. The first part includes certain "Historical Facts", "Physical", "General Considerations" and "Financial Relations". These sections are largely a reflect of facts. The second part of the report entitled "Summary" is merely intended to direct attention to those points which appear to require special consideration by the Commission.

All figures used in this report have been carefully checked by a representative of Barker, Wetherald & Company. Reports through the Bruce at this report are appended hereto, and in order to facilitate references to the discussion in question, on the right-hand margin of the report throughout will be found abbreviated references.

Yours very truly,

Engineer.

E S S E X S Y S T E M

HISTORICAL SKETCH

In January, 1914, the Essex County Light and Power Company, Limited, which was owned by the Detroit Edison Company, began to deliver power to the Towns of Amherstburg and Kingsville and the Village of Harrow. Through the assignment of rights by the Amherstburg Light, Heat & Power Company, Limited, and the Kingsville Electric Light Company, Limited, it had acquired franchises for the distribution of power in these towns. It continued to extend its system and before the end of 1914 was also distributing power in the Village of Canard River and in the Town of Essex where it had acquired the franchise and rights of the Essex Light and Power Company, Limited. In 1915, transmission lines and distributing systems were built for the Village of Cottam and the Town of Leamington where the franchise of the Leamington Light & Heat Company, Limited, had been taken over. The Essex County Light and Power Company, Limited, supplied these municipalities with power from their steam generating plant near the City of Windsor. When the demand for power outgrew the capacity of this station, they arranged with the Canadian Salt Company, Limited, to install steam-turbine-driven generating equipment in the works of the latter company at Sandwich to augment the supply of power.

E A S T E R N

MINNESOTA REGION

In January, 1926, the Minnesota Power & Light Company, Limited, which was owned by the United States Company, began to deliver power to the towns of Ashburnham and Kingsville and the Village of Barrie. Through the assignment of rights by the Northwestern Light, Heat & Power Company, Limited, and the Minnesota Light Company, Limited, it has acquired characters and electricity at power to these towns. It distributes in addition the power and delivers the rest of 2012 the also the distributing power in the Village of Mount Clare and in the Town of Dawes where it has acquired the franchises and rights of the Dawes Light and Power Company, Limited. In 1911, transmission lines and distributing systems were built the the Village of Potter and the Town of Dwightville where the franchise of the Dwightville Light & Ice Company, Limited, had been under way. The power plants and transformers, equipment being supplied with power from the steam generating plant near the city of Lincoln. The Lincoln Gas Power Company the company of its main station, they network with the Canadian Gas Company, Limited. In Lincoln steam-driven-driven-driven generating equipment in the works of the latter company at Tonawanda is adjusted the supply of power.

At the request of the municipalities concerned the Commission entered into negotiations with the company for the purchase of the system and on May 22nd, 1918, made an agreement with the Essex County Light and Power Company, Limited, by which the Commission acquired certain of their transmission lines, stations and distributing systems. WJF. p.4, & 5.

The purchase price was $226,000.00 paid in bonds of the Commission guaranteed by the Province. The purchase was authorized by Order-in-Council dated April 9th, 1918.

The franchises acquired from the Essex County Light and Power Company, Limited, gave the right to transmit or distribute power in the Townships of Sandwich West, Anderson, Malden, Colchester North, Colchester South, Gosfield North, Gosfield South and Mersea, and in the Towns of Amherstburg, Essex, Kingsville and Leamington. The transmission lines acquired consisted of about 55 miles of 26,400-volt lines, extending over a considerable part of the County of Essex. They connected the transformer and distributing stations in the Municipalities of Leamington, Kingsville, Essex, Amherstburg, Harrow, Cottam and Canard River. A local distributing system was supplied by each of these stations. WJF. p.6.

The system had been supplied with current at 60 cycles frequency, and it was therefore necessary to make extensive replacements and alterations to the equipment before power could be taken from the Niagara System at 25

cycles. To supply the system while these changes were being made an agreement was entered into with the Canadian Salt Company at the time the system was purchased. By the agreement this company continued to supply power to the system from the steam turbine plant set up in their works at Sandwich, until such time as the Commission was ready to take power from the Niagara System. The Detroit Edison Company also agreed to supply the Canadian Salt Company with the coal required to operate the steam turbine plant. The price paid by the Commission for this power was 1-3/4 cents per kilowatt-hour. WJF. p.6 & 7.

The required changes to 25-cycle equipment were made in all the stations by February 1st, 1919, and on that date the supply of power from the Canadian Salt Company was discontinued and the system was connected with the Essex transformer station of the Niagara System, and since that date all power has been drawn from that source. WJF. p.7.

The 60-cycle equipment which was replaced by 25-cycle equipment when the system was supplied with power from Niagara was sold, as was also the old plant and a section of transmission line connecting the Town of Sandwich with the system. WJF. p.7 & 8

The Commission constructed a feeder line to connect this system with the Essex Transformer Station of the Niagara System. It has also converted the old steam plant building into an office and stores building and has

system. In supply the system this Hydro Commission was being made an agreement was entered into with the Wenonah Gas Company at the time the system was purchased. By the agreement this company continued to supply power to the system from the steam turbine plant set up in their works at Sarnia. Until such time as the Commission was ready to take power from the Niagara System. The Hydro Electric Commission also agreed to supply the Gas Company with the exact requirement in operating the steam turbine plant. The price paid by the Commission for this power was 1-3/4 cents per kilowatt-hour.

The 60-cycle system was completed on 15-cycle equipment and made in all its minutes by Saturday July 1910. And on that date the supply at power from the Queenston Chippawa Power was discontinued and the system was connected with the Steam transformer station at the Niagara System, and since that date all power has been taken from that source.

The 60-cycle equipment which was replaced by 25-cycle equipment when the system was supplied with power from Niagara was sold, as was also the old plant and a section of transmission line connecting the town of Sarnia with the system.

The Hydro-Electric Commission of Ontario then in charge this system with the Niagara Transformer station of the Niagara System. It has also connected the old Port Dalhousie Line to serve the Niagara Falling Power Co.

extended the local distributing systems.

The Essex System is operated entirely by the Commission both as to transmission lines and local distributing systems. There are no contracts with the municipalities by which the Commission is to supply power at cost. The system, therefore, differs from most of the other systems in that none of the municipalities supplied can be classed as "Hydro Municipalities". There is only one rural district, "Leamington District No. 1", on the system and this is supplied from the Leamington substation.

P H Y S I C A L

General

The Essex System may be described as serving the westerly and southerly part of the County of Essex. The transmission lines extend from the Essex transformer station south east of Windsor to Canard River, thence south to Amherstburg, and east from there to Leamington near the easterly boundary of the county. A spur also runs from Kingsville to reach Gottam and the Town of Essex near the centre of the county.

Speaking broadly the Essex System consists of transmission lines and distributing lines serving seven municipalities and one rural district. WJF. p.9.

Sources of Power Supply

There are now no local generating stations which are used as a source of supply for the Essex System. The entire supply of power for the system is purchased from the Niagara System of the Commission and supplied through the Essex transformer station of that system. The Essex System has no high voltage transformer station of its own. WJF. p.9 & 11.

R E F E R E N C E S

General

The above groups may be identified in setting the centralized non-commercial grid at the Tennessee Valley Authority Dixon Steam Plant for Chemical Station Power Plant by Dixon Engineering Company, Inc. Chicago, Illinois, Chief Engineer Donald Dixon, Jr. Chief Engineer Dixon, Jr. Chief Engineer Dixon, Jr. Chief Engineer

Miscellaneous Power Plants in the District

As previously indicated in the text the source of supply for the system was originally the steam generating plant of the Essex County Light and Power Company, Limited. This plant was purchased and dismantled by the Commission, the equipment sold, and the building converted into an office and stores building. There is a steam turbine generating plant in the works of the Canadian Salt Company at Sandwich from which power was obtained for the system until February 1st, 1919, when it was connected with the Essex transformer station of the Niagara System after being changed over to take power at 25 cycles instead of 60 cycles as previously supplied to it. The plant in the works of the Canadian Salt Company is a steam-turbine-driven generating unit of 750-K.W., 3-phase, 60-cycles, 2,300-volts. WJF. p.11

Transmission Lines

The transmission lines of the Essex System consist of about 63 miles of 26,400-volt lines and about 8 miles of 4,000-volt lines. These lines are all of wooden pole construction and present no extraordinary features. They were built by the Essex County Light and Power Company in 1914 and 1915 and the tie line to the Essex transformer station of the Niagara System was built by the Commission in 1918 and 1919. It may be noted that the average span is 160 feet whereas the normal span for similar lines on other systems is about 130 feet. WJF. p.11 & 12

Electricity Every Where
In the District

A practically informed in the last the means of supply for the system was originally the steam generating plant of the Lewis County Light and Power Company, Ghatsva. This plant was purchased and eventually by the Commission, the equipment said, and the building converted into an office and storage building. There is a first steam generating plant in the works of the Cascadia Mill Company as soonwise even which power was obtained for the lighting early December 1st, 1917. Here it was connected with the Edison transformer station of the Pacific Power Light which ensures over to such power as it should demand or do service as practically applied be is. The plant in the power of the Cascadia Mill Company is a steam-turbine-driven electricity mill of 100-kilo. 2-phase. 60-cycles. 2,300-volts.

Transmission Lines

The transmission lines of the Ghatsva Power Company at about 22 miles of 22,000-volt lines and some 2 miles of 6,600-volt lines. These lines are all of wooden pole construction and strung on insulators. They were built by the Lewis County Light and Power Company in 1910 and 1912 and the line to the Ghatsva transformer station line of the Pacific Power was built by the Commission in 1910 and 1912. It may be noted that the Pacific Power in the station is about 120 feet.

Transformer & Distributing Stations

The transformer and distributing stations at Amherstburg and Kingsville are brick buildings about 24' x 26' x 18', those at Canard River, Cottam, Essex and Harrow are pole type stations, and the station at Leamington is an outdoor steel structure. At Amherstburg, Kingsville and Leamington the voltage is reduced to 4,000, at Essex and Harrow to 2,300, and at Canard River and Cottam to 230 volts for local distribution.

The stations are all of small capacity, Amherstburg being the largest with transformers of 300-K.V.A. capacity and Canard River and Cottam the smallest with 25-K.V.A. capacity. The total transformer capacity of all the stations amounted to 1,025 K.V.A. on October 31st, 1921. WJP. p.12

Details of the different stations are given on page 12 of our Consulting Engineer's report.

Local Distributing Systems

It is stated that no contracts have been made between the Commission and the municipalities supplied with power by the Essex System. The Commission continues to operate the distributing systems and to supply power under the franchises granted to the Essex County Light and Power Company or assigned to it by other companies, all the rights

Transformer & Distribution Stations

The transformer and distributing stations at Schenectady and Ellenville are brick buildings about 24' x 24' x 12', three of Schenectady Station's, Ellenville and Springs are pole type structures, the remaining or Lexington is an outdoor metal structure. At Schenectady, Ellenville and Lexington the voltage is reduced to 4,400, at Tivoli and Springs to 2,300, and at Schenectady and Ellenville in 220 volts for local distribution.

The stations are all of recent construction, Schenectady being the largest with transformers of 150-C.V.A. capacity and Springs being the smallest with 50-C.V.A. capacity. The total transformer capacity of all the stations amounts to 1,150 C.V.A. or nearly 1540 H.P.

Details of the different stations are given on page 12 of our Consulting Engineer's report.

Local Distribution System

It is stated that no difficulty has been made between the Companies and the municipalities supplied with power by the Cedar System. The Commission recommends to operate the distributing systems and to supply power under the franchises granted to the Jones County Light and Power Company as existing in it by other ordinances, but the rights

of these franchises having been taken over by the Commission when the system was bought from the Essex County Light and Power Company. The accounting for the municipalities of the Essex System is therefore in the general accounts of the Commission for the system, and the details for the various municipalities are not given in the annual reports. WJP. p.15

A map showing transformer stations and transmission lines forms the frontispiece of this report.

GENERAL ECONOMICS

Capital Investment

Under authority of Order-in-Council, the Commission purchased the Essex System from the Essex County Light, Heat & Power Company for $226,000 in accordance with the provisions of an agreement bearing the date of May 22nd, 1918.

The properties acquired comprised certain transmission lines and stations situated in the County of Essex, the distributing systems in the municipalities of Leamington, Kingsville, Essex, Amherstburg, Harrow, Cottam and Canard River and a small amount of equipment, furniture and stores pertaining to the system as well as franchises, contract rights and the goodwill of the business as a going concern.

The purchase was completed on June 1st, 1918, and the purchase consideration of $226,000 was paid in the following bonds of the Commission guaranteed by the Province:

4% 40-year debentures	-	$200,000
5% 10-year debentures	-	26,000
Total	-	$226,000

P.W. p.4.

The assets were valued as at the date of acquisition by the Engineers of the Commission as follows:

CAPITAL STATEMENT

General Insurance

Since Nation's of Sylvia-Lombardi, the Commissioner previously the Sylvia Lorenz Mere the Sunset Fronts 1,000. Sunset Tower Company has $250,000 in accordance with the provisions of an agreement bearing the date of May 25th, 1,000.

The premiums received amounting totally to Sylvia and statutes deposed in the Treasury of Canada. The statutory reserve for the contingencies of insurance, liquefiable, issue, reinsurance, losses, factors and bonus give and a small amount of equipment. Furniture and fixtures pertaining to the agency as well as Treasuries, security rights and the goodwill of the business as a going concern.

The purchase was completed on June 1st, 1,000, and the purchase consideration of $250,000 was paid in the following rates of the consideration purchased by the Sylvia:

4% 40-year debentures	-	$150,000
8% 10-year debentures	-	80,000
Issued	-	$250,000

The assets were valued as at the date of acquisition relative by the Guarantor of the Commissioner of Taxes.

Particulars	Amount	
Transmission Lines	$104,099.71	
Distributing Stations	32,779.57	
Old Plant	4,464.24	P.W.
Local Distributing System	84,656.48	p.4.
T o t a l -	$226,000.00	

Subsequent to June 1st, 1918, certain of the plant and equipment was sold or otherwise disposed of, resulting in a net loss of $13,851.55 on the basis of the Engineers' valuation, which was charged to intangibles. As an offset against this loss certain equipment valued at $5,806.67 was acquired which was not included in the Engineers' valuation, and this sum together with other amounts resulting from the sale or disposal of certain other properties resulting in a net credit of $1,158.97, left a balance in the intangible account as of October 31st, 1922, of approximately $6,900.

Since the acquisition of the system, the Commission has made net additions costing $167,920.12, which, together with the value of the capital assets in the amount of $221,890.03 as of June 1st, 1918, makes a total investment as of the close of the fiscal year 1922 of $389,810.15.

The following is a brief summary of the additions of the company:

Particulars	Amount
Transmission lines	$184,[illegible],71
Distributing stations	34,777,87
Old Plant	6,454,03
Local distributing system	[illegible]
T o t a l -	$[illegible],[illegible],[illegible]

Subsequent to June 1st, 1918, negotiations at the place and equipment was sold to Schuylkill Electric Co., resulting in a net loss of $[illegible] on the basis of the Engineers' valuation, which was amended to [illegible], in an effort equitably this loss entails equipment valued at $[illegible] which was not included in the Engineers' valuation, and this was negotiated with other matters resulting from the sale of equipment at another property resulting in a net profit of $[illegible]. Left a balance in the Depreciation account as of October 31st, [illegible] of approximately $[illegible].

Since the organization of the Company, the Commission has made the additions amounting $[illegible], which together with the value of the original assets in the amount of $[illegible] as at June 1st, 1916, gives a total investment as of the close of the fiscal year 1921 of $[illegible].

The difference in a total amount of the additions at the company

Cost of additional equipment purchased and of equipping system with 25 cycle transformers, meters, etc. (less the value credited for 60 cycle equipment withdrawn from use) -	$62,215.69	
Conversion of old steam plant building into office and storehouse building, and for minor installations of equipment -	15,101.92	
For improvement to existing transmission lines and construction of a feeder line from the Niagara System -	30,984.40	
For extensions to seven local distribution systems -	35,822.65	P.W. p.6.
Sundry small additions -	6,761.47	
Total to October 31st, 1921	$150,885.13	
Expenditures during the fiscal year ending October 31st, 1922, which we understand were made for the most part in connection with the local distributing systems	17,033.99	1922 Accts.
Total -	$167,920.12	

The following is a table of the capital cost per horse-power purchased:

Transmission Lines -	$100	
Transforming and Distributing Stations --	66	
Local Distributing Systems -	142	
Rural Lines -	22	WJP.
Miscellaneous -	12	p.21
	$342	

Our Consulting Engineer states that "the high capital cost per horse-power is due to the comparatively

great length of transmission lines for a system using so little power and to the fact that all the local distributing systems are included in the capital costs".

Accounts Receivable

We understand from Mr. Guilfoyle, of Messrs. Clarkson, Gordon & Dilworth, that the accounts receivable in the amount of $3,993.96 as of October 31st, 1928, are all considered collectible.

Materials and Supplies

The balance in this account of $13,846.74 represents materials and supplies on hand in the storehouses of the Essex System and the values placed thereon are considered fair by the Commission's Auditors.

Debentures Issued for and Cash Advanced to the Essex System

The following is a summary of the debentures issued for and cash advanced to the Essex System by the Commission and the Province:

			1922 Accts.
Debentures of the Commission guaranteed by the Province given in payment of the purchase price,-			
4% 40-year debentures maturing June 1st, 1958,	$200,000.00		
5% 10-year debentures maturing June 1st, 1928,	26,000.00	$226,000.00	
Cash advanced from the renewal and other reserve funds in the hands of the Commission		114,171.63	
Cash advanced by the Province of Ontario for the purpose of the Essex System		22,000.00	
T o t a l -		$362,171.63	
Less: Sinking Fund accumulations to October 31st, 1922		20,211.54	
Leaving a net total of		$341,960.09	

It might be well to point out that interest is being charged on the monies advanced to the Essex System by the Commission at the current rates charged to the Commission by the Province.

Reserve for Renewals

The balance in the reserve for renewals at October 31st, 1922, amounted to $47,954.84, which comprises the following:

4% 40-year debentures maturing June 1st, 1980.	$200,000.00
3% 10-year debentures maturing June 1st, 1948.	50,000.00
Cash advances from the General and other Reserve Funds in the hands of the Commission	116,171.41
Cash received by the Province of Ontario for the purpose of the Queen Street	200,000.00
T o t a l	$566,171.41
Less: Sinking Fund commutations to October 31st, 1947	25,171.41
leaving a net total of	$541,000.00

COPY

It might be well to point out that interest is paid always in the equal amounts determined in the issue prices of the debentures at the current rates ruling at the commencement by the Province.

Reserve for Contingis

The balance in the reserve for renewals at October 31st, 1947, amounting to $47,186.84, which comprises the following:

Period	Annual Provision	Interest at 4%	Together	
				P.W. 12.
Five months ending October 31, 1918	$3,716.17		$3,716.17	
Fiscal year ending October 31st,				1922 Accts
1919	9,883.96	$148.65	10,032.61	
1920	12,759.47	549.95	13,309.42	
1921	13,732.40	1,082.33	14,814.73	
1922	7,380.96	1,667.36	9,048.32	
	$ 47,472.96	$ 3,448.29	$ 50,921.25	
Deduct -				
Sundry Charges			2,967.21	
Balance, October 31st, 1921			$ 47,954.04	

Additions to the reserve to October 31st, 1921, were provided by an annual charge of 4% of the capital investment together with interest at the rate of 4% per annum on the balance of the reserve, while during the fiscal year ending October 31st, 1922, additions to the reserve were made on the basis of 2% of the capital investment with interest added at 4% per annum. This reduction in the renewal rate was given effect in the year 1922 and was not made retroactive.

In respect of the adequacy of the renewal reserve, our Consulting Engineer states as follows:

> "It is stated that it is the practice of the Commission to maintain the system in a condition of economical production which is stated to be about 75% as good as its original new condition and that the expense of doing so is charged to maintenance."
>
> "At October 31st, 1921, the depreciable capital was about $372,000 and 25% of this amount is $93,000. So long as the practice of charging

Date	Annual Provision	Interest on Sinking Fund	Sinking Fund
Five months ending October 30, 1919	$3,722.17		$3,722.17
Fiscal year ending October 31st,			
1919	9,184.19	$344.41	$9,528.60
1920	12,727.47	344.41	$13,071.88
1921	13,722.47	1,804.69	$15,527.16
1922	7,000.00	1,527.16	$8,527.16
	$46,356.30	$3,820.67	$50,176.97

Debit -

Sinking Fund

Balance, October 31st, 1921 $46,356.30

COPY

Analysis of the reserve to October 31st, 1921, was provided by an annual charge of 4% of the capital investment together with interest at the rate of 4% per annum on the balance of the reserve. While adjusting the fiscal year ending October 31st, 1921, analysis of the reserve was made on the basis of 4% of the capital investment with interest added at 4% per annum. This procedure is the renewal rate was given effect in the year 1922 and was not made retroactive.

In respect of the adequacy of the renewal reserve, our Consulting Engineer states as follows:

"It is usual that it is the practice of the Municipality to maintain the system in a condition of maximum producing value in order to be able to use as long as its original and additions and that the expense of doing so is charged to maintenance."

"As October 31st, 1922, the depreciable capital was from $247,000 and 4% of this amount is $98,800. So long as the practice of charging

to maintenance all expenditures necessary to keep the plant up to 75% of its new condition is continued, this amount of $93,000 would be all that the renewals reserve would have to cover. The renewals reserves at October 31st, 1921, amounted to $41,685 which appears to be ample; and, if the present rate of making annual additions to the reserves be maintained with interest compounded in the usual way, the renewals reserves soon will become unnecessarily large." WJF. p.50

It is tonbe noted that the above remarks of our Consulting Engineer apply to conditions in effect at October 31st, 1921, when the provisions were being set aside for renewals at the rate of 4% of the capital investment with interest at 4%. As pointed out previously, during the fiscal year ending October 31st, 1922, the Commission reduced the 4% rate to 2%.

Reserve for Sinking Fund

The balance in the reserve for sinking fund at October 31st, 1922, amounted to $20,211.84. The sinking fund has been provided on a basis sufficient to retire the $226,000 of debentures issued for the system at their respective maturities.

In respect of the establishment of the sinking fund, Mr. Clarkson states as follows:

"With the purchase price of the Essex System paid for by the issue of bonds of the Commission guaranteed by the Province of Ontario, the provisions of the Power Commission Act do not appear to require that sinking funds be established to meet the same - this for the reason, as I am advised by legal counsel, that the guarantee of such bonds by the Province does not constitute an advance within the meaning of Section 23 of the Act. With no munici-

palities under contract with the Commission to pay cost for power delivered by the Essex System, there would also appear to be no provisions in the Power Commission Act requiring the establishment of Sinking Funds for repayment of the advances by the Province and the Commission to the Essex System.

While not required by the Power Commission Act so to do, the Commission has, for the whole period of operation to October 31st, 1921, included sinking fund instalments - of amount sufficient to meet the bonds given in purchase of the system at the maturity thereof.*

The following is a summary of the reserve from the commencement of operations to October 31st, 1922:

Amounts provided out revenue:

For the period from June 1st, 1918, to October 31st, 1918	$1,778.97	
Year ending October 31st, 1919	4,269.54	P.W.
Year ending October 31st, 1920	4,269.54	p.11
Year ending October 31st, 1921	4,269.54	1922
Year ending October 31st, 1922	4,269.54	Accts.
Add - Interest	1,354.41	
Total	$ 20,211.54	

The Commission has not established any sinking fund in respect of the cash advanced to the system by it and the Province amounting to $136,171.63 as at October 31st, 1922.

Balance Sheet

The following is a statement of the assets and liabilities of the system as of October 31st, 1922:

A S S E T S

Transmission Lines, Transformer Stations and local Distribution Systems		$387,411.28
Furniture and Equipment:		
Office Furniture	$1,136.78	
Motor Trucks	680.00	
Tools	552.09	2,368.87
Material and Supplies		13,846.74
Accounts Receivable:		
Consumers Accounts Power Light	$2,218.15	
Consumers Accounts Sundry Supplies	1,014.15	
Mortgage Receivable on property Sold	1,011.66	
	$4,243.96	
Less reserve for doubtful accounts	250.00	3,993.96
Operating Deficit:		
Balance forward October 31,1921	$32,766.32	
Net profit for year ending October 31,'22	29,188.00	3,578.32
Total Assets		$ 411,229.17

1922 Accts.

LIABILITIES

Bonds issued to cover Purchase Price	$226,000.00	
Cash Advances from the Province of Ontario	22,000.00	
Cash Advances from the renewal and other reserve funds in the hands of the Commission	114,171.63	
	$362,171.63	
Less - Sinking Fund on deposit therewith	20,211.54	$341,960.09
Consumers' Deposits		1,103.50
Reserve for Sinking Fund		20,211.54
Reserve for Renewals		47,954.04
Total Liabilities		$ 411,229.17

A S S E T S

Transmission Lines, Structures Stations and Local Distribution Systems Furniture and Equipment		22,114,0002
Direct Projects	21,121,12	
Other Items	222,12	
Tools	22,000,12	
Material and Supplies		12,222,0
Accounts Receivable:		12,222,12
Customers Accounts Under Liens	22,112,12	
Customers Accounts Under Contracts		
Unbilled	1,012,12	
Interest Receivable on Purchased Debt	1,112,12	
Cash Invested in Sinking Funds	22,142,12	
Operating Utilities:		
Balance Expired Insurance 21,121,000,122,12		
Net profit for year ending		
Deposit 12,12,12	22,122,12	
Total		12,122,12
		$ 112,000,12

LIABILITIES

Stock issued in exact proportion with 10% advances paid the Directors of Ontario	21,000,000.12	
Bonds	22,000,00	
Park Advances from the regular and other sources held in the Bonds of the Treasury	12,112,12	
Land - Existing park on account of Interest	1,121,12	
	12,112,12	12,121,000.00
Treasury Deposits		2,100,00
Reserve for sinking fund		22,112,00
Reserve for Insurance		12,112,12
Total Liabilities		$ 112,000,12

Results of Operation

Power is supplied to the consumers on the Essex System at flat rates and in this respect the system differs from the other systems of the Commission, where power is supplied to the municipalities at cost in accordance with the provisions of the Power Commission Act.

The following is an operating account for the period from commencement of operations to October 31st, 1922, showing revenues on the basis of flat rates and the relative operating expenses:

P.W. Ex.11 1922 Accts.

	June 1st, to October 31st, 1918	Year ending October 31st 1919	1920	1921	1922
Revenue -					
From Sales of power and light	$17,253	$53,696	$85,762	$111,419	$125,577
Profit on sales of supplies, etc.	560	2,556	3,263	2,405	2,484
Total Revenue	$17,813	$56,432	$89,025	$113,824	$128,061
Cost of Operation:					
Power Purchased	$11,528	$22,239	$29,895	$ 34,875	$ 39,240
Operation, Maintenance, Overhead & General Expenses	9,278	24,103	33,174	33,297	28,924
Interest	4,199	15,231	18,262	19,100	19,059
Renewals	3,715	9,884	12,759	13,732	7,381
Sinking Fund	1,779	4,270	4,270	4,269	4,269
	$30,500	$75,727	$98,360	$105,273	$ 98,873
Profit or Loss	$12,687	$19,295	$9,335	$8,551	$29,188
Horse-Power Purchased		440	972	1090	1206

Benefit of Electricity

Power is supplied to the consumers on the Grand River at 2nd Avenue and 1st Avenue to the Kitchener district from the water system of the Commission, which power is supplied to the municipalities as close in accordance with the provisions of the Power Commission Act.

The following is an operating account for the period from commencement of operations to October 31st, 1927, showing revenues on the basis of this report and the policies mentioned elsewhere.

Year ending October 31st,

	1924	1925	1926	1927
Revenue —				
From Sales of Power and Light to Cities of Preston, etc.	$17,520	$24,494	$27,747	$111,413
Rent	140	2,202	2,202	2,202
Total Revenue	$17,660	$26,696	$29,949	$113,615
Less Expenses:				
Power Purchased	$11,022	$23,202	$28,845	$ 74,174
Operation & Maintenance, Overhead & Depreciation				
Supplies	4,273	6,122	6,127	8,187
Salaries	4,122	12,322	14,322	13,700
Insurance	2,724	2,824	2,727	2,724
Telephone	1,170	1,170	1,170	1,322
Sinking Fund				
	$23,309	$46,787	$53,241	$100,147
Profit on Year	$(5,649)	$(20,091)	$(23,292)	$ 13,468
Surplus-Power Investment	140	342	1,342	2,342

The profits and losses as shown above for the period from the commencement of operations to October 31st, 1922, may be summarized as follows:

	Year	Amount	
Loss:	1918	$12,687	
	1919	19,295	
	1920	9,335	$41,317
Less - Profits	1921	8,551	
	1922	29,188	37,739
Net Loss for Period	-		$ 3,578

From a comparison of the foregoing operating account for the years 1919 and 1922, it will be seen that the annual revenues have increased from $56,432 to $128,061 or approximately 127% and the loss of $19,295 has been converted into a profit of $29,188.

During the five months ending October 31st, 1918, and the first three months of the year ending October 31st, 1919, the system purchased power from the Canadian Salt Company, Limited, at a cost of 1¾ per K.W.H.; since February 1st, 1919, the power has been purchased from the Niagara System, on a cost basis in respect of which the following table is given:

The profits and losses as shown above for the period from the commencement of operations to October 31st, 1920, may be summarized as follows:

Item	Year	Amount	
	1918	211,227	
	1919	49,828	
	1920	8,538	261,317
Less - profits	1921	8,821	
	1922	12,182	21,003
Net loss for period	-		$ 240,314

Item 2 appearing at the top of the preceding quarter account for the years 1921 and 1922, it will be seen that the annual revenue from interest from 314,227 to 249,821 or approximately 34% and the loss of 214,182 has been overtaken thus a profit of 222,188.

During the first months ending December 31st, 1922, and the first three months of the year ending October 31st, 1923, the Ryerson Greenhouse Power from the Consolidation Gas Company, Limited, at a rate of 15¢ per K.W.H. since February 1st, 1919, the power has been purchasing from the Niagara Power, so a very large saving is effected by using the hydro-electric power in winter.

Power Purchased From	Horse-Power	Total Amount	Per H.P.
Year ending October 31,1919			
Niagara System	440	$14,451	$32.84
Canadian Salt Company (3 months to February 1st, 1919)		7,787	
		$22,238	
Year ending October 31,1920			
Niagara System	972	$29,895	$30.76
Year ending October 31,1921	1070	$34,875	$32.01

P.W. p.15

The following is a table of the annual subdivided costs per horse-power purchased together with revenues per horse-power on the basis of deducting profits resulting from the sale of supplies and sundry other income from operating expenses for the years 1919 to 1921 inclusive:

	Fiscal Years Ending October 31, 1919	1920	1921
Power Purchased	$50.50	$30.75	$32.00
Operation	8.18	5.01	4.03
Maintenance	16.54	16.59	12.80
Overhead and General Expense	24.30	9.38	11.50
Interest	54.60	18.78	17.53
Renewals	22.44	13.11	12.60
Sinking Fund	9.70	4.39	8.92
Total Costs per horse-power	$166.26	$97.81	$94.38
Total Revenues per horse-Power	122.50	88.25	102.20

WJF. p.37

Share Purchased From	Number	Total Value	Per Cent.
Year ending October 31,1919			
Kingore Dyeing Company	444	$24,200	44.000
Thomsline Bell Company (2 months in Interim Yr. 1918)		7,700	
		$31,900	
Year ending October 31,1920			
Niagara Dyeing	272	$16,320	29.600
Year ending October 31,1921 1920		$47,577	13.000

COPY

The Directors in a Report of the annual meeting held

Dec. 1st, 1921 presented Mr. Joseph H. Ellis reviewed the

Income-Tax in the Years of economic crisis involving the

life and of supplies and money. Below income tax liability

expenses for the years 1919 to 1921 inclusive:

	Fiscal Year Ending October 31, 1921	1920	1919
Power Purchased	$14,000	$18,000	$18,000
Operating	9,[illegible]	10,0	10,0
Depreciation	14,[illegible]	14,[illegible]	14,[illegible]
Dyestuffs and Textile Supplies	14,[illegible]	16,0	12,[illegible]
Interest	14,[illegible]	14,[illegible]	12,[illegible]
Insurance	2,[illegible]	2,[illegible]	2,[illegible]
Sinking Fund	2,[illegible]	2,0	2,0
Total Cost of Production	$[illegible]	$[illegible]	$[illegible]
Total Expenses per Income Tax Return	14,[illegible]	12,[illegible]	12,[illegible]

From a comparison of the detailed costs it may be observed in what respects and to what extents costs have varied between years.

We have pointed out the remarkable conditions that have been brought about on the system under the Commission's operation and the details in the above table show that the unit costs in each case have decreased.

POWER DATA

Population Served

The latest figures available, those for 1921, give the population of the towns on the system as follows:

Amherstburg	2,500
Essex	1,470
Kingsville	1,827
Leamington	3,668
	9,465

It is stated by the Commission that the total population of the district served is about 10,500, the population of Gosard River, Harrow, Cottam and the First Concession district would therefore be about 1,000 people. The district served by the system is a good farming country, with small towns and villages well distributed through it but there are no industries located in the district which use power in large quantities. No information has been made available as to the number of consumers on the system or in the different municipalities served by the system.

WJF. p.13 & 14.

From a comparison of the foregoing data it may be observed in that respects and in what certain cases have varied improved years.

We have pointed out the remarkable rapidity that has been brought about as the system under the Commission's operation and the benefits in the short time that the well people in each case have enjoyed.

PRESENT DAY

Population Served

The Interborough authorities, from our data, give the population of the towns on the system as follows:

Manhattan	1,300,000
Bronx	1,200,000
Brooklyn	700,000
Queensboro	600,000
	4,800,000

It is stated by the Commission that the total population of the district served is about 15,000,000, the population of Greater City, Bronx, Queens and the Jersey Commission districts would therefore be about 3,000 people. The district served by the system is a very densely populated city with small towns and villages well distributed throughout the state and no Commission located in the district which has power in large quantities. The information has been made available on the number of passengers on the system as in the number of passengers

Growth of Market and Ultimate Sources of Power Supply

The larger centres of population in the district are now all served by the system and any rapid increase in the population served can only come about by the building up of an extensive system of rural distribution.

The power purchased by the system has, however, risen rapidly from 440 horse-power in 1919 to 1,206 horse-power in 1922, and as the point of saturation for domestic consumption has apparently not by any means been reached it is reasonable to assume that the load will continue to increase, though at a reduced rate, and might reach 2,000 horse-power within five or six years.

This figure, of course, does not include power which might be taken by industries, requiring large amounts of power, which might locate in the district.

There are no local sources of supply of power except the steam plant at the Canadian Salt Company's works at Sandwich and this is not now large enough to supply the system, nor does there appear to be any source of power for the Essex System which might be substituted for Niagara Falls. Power will undoubtedly continue to be supplied to the Essex System through the transmission lines of the Niagara System of the Commission from the plants of the Commission at Niagara Falls.

NJP.
p.14

Growth of Energy and Utilities
Sources of Power Supply

The larger centres of population in the district are now all served by the rivers and our study increases in the population served can only mean which by the building up of an adequate system of rural electrification.

The power provided by the Irvine Dam, however, since rapidly from 880 horse-power in 1918 to 1,500 horse-power in 1922, and as the point of saturation for area-to-area consumption has approximately not by any means been reached it is reasonable to assume that the load will continue to increase, though at a reduced rate, and might reach 2,000 horse-power within six or ten years.

This figure, of course, does not include power which might be taken by industries, requiring large amounts of power, which might locate in the district.

There are no local sources of supply of power except the steam plant at the Ormskirk Bell Company's works at Ormskirk and this is not now large enough to supply the demand, and does there appear to be any chance at point for the Steam Station which might be substituted for Irvine Falls. Power will consequently continue to be supplied by the Dams Station through the transmission lines of the Niagara System of the Commission over the plants of the Commission of Niagara Falls.

Power Situation

The Commission is the sole distributor of power in the district and is not competing with any private company. The growth in the load indicates an increasing demand for power which will likely continue for some years at least, as an estimate of the power consumed at present gives a rather low consumption per capita. WJP. p.41

Power will undoubtedly continue to be supplied from the Niagara System and there does not appear to be any other feasible source of supply. Such being the case, it would seem advisable to merge the Essex System with the Niagara System at some future date when that course will have become practicable. WJP. p.41

GENERAL RELATIONS

Relation between the Municipalities and the Commission

The municipalities on the Essex System are in the same position as all private customers of the Commission; a position not unlike that of most of the municipalities on the Central Ontario System; they purchase power from the Commission at flat rates; they have no pecuniary interest in the system; and they are under no liability in respect thereof. They are not "Hydro Municipalities" and are not supplied with power "at cost" within the meaning of the Power Commission Act.

The relationship to the Commission is merely the relationship of purchaser to vendor.

Relation between the Commission and the Province

The relation of the Commission to the Province in respect of the Essex System is identical with their relation in respect of the Thorold System, except that the only municipality on the Thorold System is on a "cost" basis. The system was purchased with bonds of the Commission, guaranteed by the Province. The improvements to the system since acquisition have been financed by the Commission and the Province,- that is, the Commission has advanced cash from renewal and other reserve funds in its hands in the amount of $114,171.63; and the Province has appropriated and advanced $22,000 in cash. The

CONCLUSIONS

Relation between the Commission and the Parents

The relation of the Commission to the Parents in Kenya differs in important respects from its relations with their relatives in Uganda and Tanganyika, mainly that the only material policy on the Tribal System is on a Tribal basis. The system was practiced with Masai and the Wanyaturu, guaranteed by the Treaties. The improvements in the system since Independence have been planned by the Commission and the Ministry, when the Commission has advanced such ideas regional and other problems in the Masai in the course of discussion and the problems has crystallized the advanced ideas. The Commission is also

responsible of problems in Kenya.

Relation between the Commission and the Parents

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application by the Commission of renewal and other reserve funds on capital account in connection with systems, other than in respect of which they were established, is commented upon elsewhere in the reports of this Commission. As a matter of fact, the Commission may hope, in respect of this particular system, to recoup these funds out of future profits, but, under ordinary circumstances, the Commission would request the Legislature for an additional appropriation sufficient to make up the deficiency. At all events, it is apparent that in the last analysis the Province is in the same position as though it had advanced the full amount expended on improvements, viz: $136,171.65.

The municipalities are under no collateral, contractual liability; the Commission and ultimately the Province receives the profits and is responsible for any losses in the operation of the system.

Such a relationship between the Commission and the Province is not contemplated by the Power Commission Act.

It would seem that if such a relationship is to subsist, the Act should be amended to provide for such a relationship and to define the relative responsibility of the parties.

The Provincial viewpoint is centred upon ways and means of safeguarding its investment and securing repayment of its advances. Prior to October 31st, 1921, the system had sustained such heavy losses that no funds were available to apply on sinking fund account. During the fiscal year ending October 31st, 1922, a substantial profit was realized, and the Auditor, Mr.

applicable by the Commission of Canada and other provinces
as applied mutatis in connection with Canada, which case is
treated as which they are applicable. In addition upon exa-
mining in the Province of Nova Scotia. As a matter of fact,
the Commission has been, in regard of this particular ques-
tion, greatly times from and of future profits, yet, under existing
circumstances, the Commission would expand the implications for
an additional appropriation sufficient to make up the deficiency.
At all events, it is apparent that in the last analysis the
Province is in the same position as though it had advanced the
full amount expected as improvements, viz: $112,000.

The Commission are under no obligation, contractual
liability the Commission and eventually the Province receives
the profits and is responsible for any losses in the operation
of the mines.

There is particularly between the Commission and the
Province is not considered by the Tower Commission and.

It would seem that it was a relationship in an entirely
the lot should be managed in perhaps for such a relationship and
to define the relative responsibility of the parties.

The Provincial standpoint is matched upon such and
of contemplated the investment and commercial programme of its
advance. Prior to October 31st, 1913, the system had operated
such merely leaves that as funds were available to supply an
adequate loss account. During the fiscal year ending October 31st,
1929, a substantial profit was realized, and the Minister, Mr.

Clarkson, reports that the Commission is establishing a sinking fund sufficient to retire at maturity the bonds issued by the Commission and guaranteed by the Province as consideration for the purchase.

The Commission, reports Mr. Clarkson, takes the position that the guarantee of bonds by the Province does not constitute an "advance" within the meaning of Section 28 of the Act. It is contended that the nature and adequacy of the sinking fund established to retire the bonds is entirely in the discretion of the Commission. Accordingly, the sinking fund established is not on the thirty-year basis contemplated by the Act, but on a forty-year basis in respect of $200,000 and on a ten-year basis in respect of $26,000, which corresponds with the term of the bonds.

The sinking funds to repay the cash advances of the Commission and the Province to the system, amounting at October 31st, 1922, to $136,171.63, are in a still more anomalous position. To quote from Mr. Clarkson's 1921 report, at page 63, "With no municipalities under contract with the Commission to pay cost for power delivered by the Essex System, there would also appear to be no provisions in the Power Commission Act requiring the establishment of sinking funds for repayment of the advances by the Province and the Commission to the Essex System".

In other words, the Commission takes the view that inasmuch as the Essex System is not a "work" within the meaning of the Power Commission Act, and inasmuch as the municipalities are not on a cost basis and required to set up sinking funds to

repay advances as part of the cost of power, the provisions of the Act requiring the repayment of "advances" do not apply. In pursuance of this interpretation of the Act , the Commission has established no sinking fund to retire these cash advances and to date has expressed no intention of doing so. Presumably, if profits continue to accrue in ensuing years, the Commission will establish some sort of a sinking fund, but the nature and term thereof will, it is alleged, be at its discretion rather than pursuant to the terms of the Act.

It is apparent that legislation must be enacted to safeguard the interests of the Province and generally to give direction to the Commission in the operation of systems such as the Essex System.

It is suggested that the provisions of the Power Commission Act, so far as practicable, should be declared to apply to systems in the position of the Essex System. To this end, the system should be declared "works" within the meaning of the Power Commission Act; the term "advance" as used in the Power Commission Act should be defined to include the guarantee of bonds by the Province; and the Commission should be required to establish sinking funds on a thirty-year basis in respect of all cash advances of the Province, including advances to systems which do not include municipalities under "cost contracts" with the Commission.

Very reluctant as part of the case of power, the provisions of the act requiring the "advance" to not apply. In presence of this interpretation of the act, the Commission has established an criteria that is varied from advance and they has expressed no intention of doing so. Presumably, if public hearings is needed in certain areas, the Commission will establish some sort of a sinking fund, but the means and terms thereof will, if it chooses, be at the discretion rather than pertinent to the terms of the act.

It is apparent that legislation must be passed to safeguard the interests of the Province and generally to give effective to the Commission in the operation of systems such as the Lower Crikes.

It is suggested that the provisions of the Power Commission Act, as far as practicably, should be changed to apply to Crikes in the territory or the Lower Crikes. In this act, the terms would be described "Crikes" within the meaning of the Power Commission Act the term "Crikes" as used in the Power Commission Act should be defined to include the generation of power by the Crikes and the Commission should be required to establish electric plants as a third-party basis in respect of all such schemes of the Province, including advance in areas which is not limited municipalities under "Crikes" within the Commission.

SUMMARY

Capital Investment ("General Economics" - p. 9)

The total investment in the system as of October 31st, 1922, amounted to $369,810.15 made up of $167,920.12 expended on the system since its acquisition by the Commission, the balance being represented by $221,890.03 shown on the books of the Commission as the value of the capital assets as at June 1st, 1918.

Reserve for Renewals ("General Economics" - p. 13)

The balance in the reserve for renewals account at October 31st, 1922, amounted to $47,954.04. During the years 1919, 1920 and 1921 the renewal reserve was provided by an annual charge of 4% of the capital investment together with interest at the rate of 4% per annum on the balance of the reserve. This rate was reduced during the year 1922 to 2%, but was not made retroactive. Our Consulting Engineer in reporting upon the matter and in referring to the 4% provision states:

> "If the present rate of making annual additions to the reserve be maintained with interest compounded in the usual way, the renewal reserve soon will become unnecessarily large."

At the time Mr. Francis made his report he did not have information as to the reduction that had been made and did not, therefore, refer to the matter.

Reserve for Sinking Fund ("General Economics" - p.15)

The total standing to the credit of this reserve as at October 31st, 1922, was $20,211.54. The Commission has provided sinking fund on two different bases, as follows:

(a) A yearly sum which will retire the $200,000 of 4%, 40-year debentures at maturity.

(b) A sum sufficient to retire the $26,000 of 5%, 10-year debentures at maturity.

The Commission has not established any sinking fund in respect of the cash advanced to the system by it and the Province amounting to $136,171.53 as of October 31st, 1922. The amount adganced to the system by the Commission was taken from renewal and other reserve funds in the hands of the Commission and amounted to $114,171.53 as at October 31st, 1922; the balance of $22,000 represents cash advanced to the Commission on account of the system by the Province.

Reserve for Contingencies

Our Consulting Engineer states that,

> "No reserve for contingencies had been established at October 31st, 1921, and it would seem to be advisable to set aside such a reserve now or as soon as the system is able to meet all the other operating charges. Power charges should if necessary be slightly increased to allow for the establishment of the reserve for contingencies and when this reserve has been built up by the annual allowances to, say $8,000 or $10,000, and the average annual charges against this reserve have been determined by some years of experience, the charge for this reserve in the cost of power might be again reduced."

Results of Operation ("General Economics" - p.18)

The operating results for the period 1918 to 1922

show varying conditions. During the five months during 1918 that the Commission operated the system a loss of $12,687 was experienced. During 1919 this loss increased to $19,295 for that year. In 1920 the yearly deficit was reduced to $9,335. In 1921 the accounts of the Commission show a profit of $8,551 and for the year 1922, due largely to the reduction in the renewal reserve, decreased operating expenses and increased revenue, this profit was increased to $29,188 for that year. Thus it will be seen that the Commission is now successfully operating the system and showing very substantial profits.

Sources of Power Supply ("General Economics" - p.19)

During the first eight months of operation the system purchased its power from the Canadian Salt Company, Limited, but since February 1st, 1919, the power has been purchased from the Niagara System on a cost basis. For the fiscal year ending October 31st, 1921, power was purchased from the Niagara System at a rate of $32.01 per horse-power.

Future Sources of Power Supply ("General Economics" - p.22)

The Commission is the sole distributor of power in the district and is not competing with any private company. There are no other sources of power supply available in the district and it will undoubtedly be necessary for the Commission to continue to supply the system with power from the Niagara System. Such being the case it would seem advisable that the Essex System be merged with the Niagara System.

General Relations ("General Relations" - p.24)

All municipalities on the Essex System are in the same position as all private customers of the Commission. They are not Hydro municipalities and are not supplied with power at cost within the meaning of the Power Commission Act. The relationship to the Commission is merely the relationship of purchaser to vendor.

As guarantor of the bonds in respect of the purchase price, the Province would necessarily be called upon to make good in case of default in the payment of interest and principal of the bonds. The Central Ontario System is owned outright by the Province and operated by the Commission; the Essex System is owned outright by the Commission. Inasmuch as the Province guaranteed the bonds of the Commission to purchase the Essex System, the liability of the Province in respect of the Essex System is not essentially different from its liability in respect of the Central Ontario System.

If the operation of the system is to be continued as at present, legislation should be enacted to safeguard the interests of the Province and the works of the system should be declared as works within the meaning of the Act. In the alternative the Essex System might well be made part of the Niagara System, of which it now forms a part insofar as its geographical location is concerned.